

Evaluating Knowledge of a Function-based Cognitive-Behavioural Treatment for Obsessive
Compulsive Behaviour in Autism Spectrum Disorder

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Abstract

Children with Autism Spectrum Disorder (ASD) have restricted and repetitive behaviours (RRBs) which may be similar to obsessions and compulsions in Obsessive Compulsive Disorder (OCD). These behaviours can be intrusive and interfere in the lives of the child and their family. Preliminary studies have shown success in using adapted Cognitive Behavioural Therapy (CBT) to treat these behaviors in children with high functioning ASD. Using a hypothetical vignette, this thesis attempted to examine procedural knowledge that the children and their parents gained while participating in a CBT treatment that was evaluated in a Randomized Controlled Trial. For both parents and children, there was a significant increase in number of strategies generated from pre to post-treatment. Further, children in the experimental group generated significantly more strategies than the treatment as usual (TAU) group post-intervention. There was no significant correlation between number of strategies generated and the child's treatment success, age, or IQ.

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Literature Review

Autism spectrum disorder (ASD) is characterized by challenges in core areas including social-communicative skills and restricted/repetitive behaviours (RRBs; American Psychiatric Association [APA], 2013). ASD is increasingly prevalent, with 1 in 68 children receiving a diagnosis (Centre for Disease Control and Prevention, 2012). Children with ASD are at an increased risk for anxiety, with a recent study of 25 children ($M = 12.80$ years) reporting that 40% of the children had obsessions and compulsions (Caamaño et al., 2013).

Obsessive Compulsive Disorder (OCD) is characterized by obsessions – anxiety causing recurrent thoughts, urges, or impulses, and compulsions – repetitive behaviours or thoughts the individual feels compelled to perform in response to the obsession or a set of rules (APA, 2013). “Higher level” repetitive and restricted behaviours present in individuals with ASD (e.g., rigid routines, washing, ordering and arranging) may be similar to symptoms characteristic of OCD, with researchers providing preliminary support for compulsive, ritualistic, and sameness behaviors loading on the same factor (Mirenda et al., 2010). However, given the fact that children with ASD are often not able to verbalize concrete obsessions related to compulsions and may show limited insight, it is difficult to distinguish RRBs from OCD (Rice, 2009; Zandt, Prior, & Kyrios, 2007). In this study, we use the term obsessive compulsive behaviours (OCBs) when referring to RRBs and compulsions characteristic of OCD.

Treatment of Paediatric OCD

Currently, the evidence-based treatment for paediatric OCD is cognitive behavioural therapy (CBT) with exposure and response prevention (E/RP) (Bolton et al., 2011; Torp et al.,

2015; Watson & Rees, 2008). Children are typically provided with CBT strategies and then exposed to situations that normally trigger anxiety and are instructed to (gradually) refrain from performing the compulsion (March & Mulle, 1998). A meta-analysis by Watson and Rees (2008) examined randomized controlled trials (RCTs) for children with OCD (13 RCTs with 10 comparing pharmacotherapy to control and 5 comparing CBT to control). While both pharmacotherapy and CBT had statistically significant pooled effect sizes ($ES=.48$ for pharmacotherapy and $ES=1.45$ for CBT), CBT had a greater effect size. Watson and Rees (2008) recommended that CBT be the first-line treatment for pediatric OCD with pharmacotherapy as a second-line treatment.

Treatment of Anxiety in Children with ASD

According to a review by van Steensel, Bögels, & Perrin (2011), 39.6% of children with ASD had at least one comorbid anxiety disorder, with 17.4% having a diagnosis of OCD. Since anxiety is a common area of concern for children with ASD, there has been considerable research exploring the treatment of anxiety in children with ASD (Sukhodolsky, Bloch, Panza, and Reichow 2013; Vasa et al., 2014). In a meta-analysis by Sukhodolsky et al. (2013), eight studies compared CBT (including teaching strategies for emotion regulation, and exposing the children to the situations that were anxiety provoking) to a control condition (waitlist control, alternative treatment control or Treatment as Usual [TAU]) to examine the effect of clinician-, parent-, and child-scored anxiety between the experimental and control groups. Results indicated large effect sizes for parent and clinician rated measures of anxiety ($d=1.21$ and $d=1.19$); child self-report measures of anxiety had a smaller, but still medium to large effect size ($d=0.68$). It is unclear why there is a large difference between parent/clinician rated measures and child self-report measures, but the authors hypothesize that it may be due to the child still

experiencing some distress (despite the absence of compulsions), increased knowledge about anxiety post-treatment, and/or being better able to identify anxiety.

For instance, Storch et al. (2013) explored the effectiveness of a CBT program for treating anxiety in 45 children (aged 7 to 11 years) with high-functioning ASD and anxiety, including some children with OCD (2 children in experimental group and two children in TAU). Children in the experimental group received 16 sessions of CBT adapted for children with ASD (*Behavioural Interventions for Anxiety in Children with Autism* or BIACA; Wood & Drahota, 2005), while those in the control group received TAU (meaning that individuals were able to continue any treatment they were doing prior to the study). The authors found that approximately 75% of participants in the experimental group responded to CBT as a treatment for anxiety, as compared to 14% of participants in TAU as measured by the *Clinical Global Impression-Improvement* (CGI-Improvement; Guy, 1976). The effect size between these groups was large ($d=0.84-1.06$) at post treatment and 73% of treatment responders maintained gains at three-month follow-up. However, individual results were not reported and so we do not know if there was a difference in treatment success for those with an OCD diagnosis.

Another study by Sofronoff, Attwood, and Hinton (2005) examined whether a 6 week CBT program would be effective for children with a diagnosis of Asperger's Syndrome and anxiety symptoms (including OCB), and whether parent involvement would relate to better outcomes. Seventy-one children (aged 10-12 years) participated in the study and were randomly assigned to one of three groups (child intervention, parent and child intervention, or wait-list control). Results for both treatment groups were promising, with parent-reported child anxiety (based on the *Spence Child Anxiety Scale-Parent*; SCAS-P; Spence, 1995) showing a significant difference between the two intervention groups at six-week follow-up; the 'parent and child'

intervention group showed the greatest improvement. Further, when the strategies learned were measured by the child's response to a hypothetical situation (surrounding an anxiety provoking math test, *James and the Math Test*; Attwood, 2002), there was a significant difference between the intervention groups at Time 2 (post) and Time 3 (follow-up) with the 'parent and child' intervention group generating more strategies than the 'child intervention alone' group, and both generating significantly more than the waitlist control group. While all three groups started out generating approximately the same number of strategies (.5), both intervention groups increased the number of strategies with the 'child intervention alone' group generating approximately 2.5 strategies at both post and follow-up and the 'parent and child' intervention group generating approximately 5 and 7 strategies at post and follow-up, respectively.

Certain methods can be used to adapt the treatment program in order to best accommodate the learning style of children with ASD, and to increase treatment effectiveness (Wood et al., 2009). Accommodations such as the use of visuals to help the children understand the concepts, the addition of parents in therapy to ensure that the parents and children are learning the strategies, and the use of a group therapy instead of individual therapy to help with social skills are all accommodations that are proposed as beneficial (e.g., Sukhodolsky et al., 2013).

Treatment of OCB in ASD

There is preliminary evidence from case studies that adapted CBT with E/RP may be effective in helping children with high functioning ASD reduce their OCBs (e.g., Boyd, McDonough, & Bodfish, 2012; Reaven & Hepburn, 2003; Vause, Hoekstra, & Feldman, 2014). In a study by Vause et al. (2014), two school-age children with ASD and OCBs completed an individualized treatment program which included a functional behavioural assessment and, based

on perceived functions, a function-based treatment in conjunction with an adapted cognitive behaviour therapy (with cognitive and behavioral strategies, E/RP, and parent training). Using a multiple baseline design with times series parent report data on OCB severity, all behaviours were substantially reduced and parents reported an improved quality of life for the child and family based on a quality of life scale questionnaire. Follow-up data was collected 5-months post-treatment, and the children maintained their gains. Studies using behavior analytic components (such as function based treatments and functional analysis) have also been successful in reducing selective OCBs such as ordering and arranging in children with ASD and an intellectual disability (e.g., Kuhn, Hardesty, & Sweeney, 2009; Rodriguez, Thompson, Schlichenmeyer & Stocco, 2012).

A preliminary RCT ($N = 14$), evaluating a treatment program (*I Believe in me not OCB!*; Vause, Neil, Yates, & Feldman, 2013) for treating OCB in children with ASD (Vause, Neil, Yates, Jackiewicz, & Feldman, 2015) showed promising results. Participants (age $M = 9.75$, IQ $M = 97.07$) were randomized into an experimental group and a TAU group. Results indicated a significant difference in the reduction in OCBs in children in the treatment group (in comparison to TAU) with medium to large effect sizes, as measured by the *Repetitive Behaviour Scale – Revised* (RBS-R; Bodfish, Symons, & Lewis, 1999), and the *Children's Yale-Brown Obsessive Compulsive Scale* (CY-BOCS; Goodman et al., 1986). Further, daily parent-rating scores were collected for those in the treatment group on the child's behaviour. These daily parent-rating scores also showed a decrease in the severity of the child's behaviour. Finally, these differences were maintained at five-month follow-up.

Since the key component of this program is that the parents and children will be able to learn strategies (such as identifying the child's OCBs, verbalizing and reframing OCB thoughts,

and exposure to anxiety-provoking situations) that they can take with them and use in the future, it is important to ensure that they are learning these strategies and can demonstrate procedural knowledge in various ways.

Measuring Knowledge Acquisition

Literature on children. For several reasons, the idea of measuring procedural knowledge acquisition is a difficult one. Children with ASD inherently have difficulties with communication and introspection, so it is difficult to know if they are able to articulate clearly what strategies they have, and how/when they would use them (Kimbi, 2014). However, Ozsivadjian, Hibberd, and Hollocks (2014) found that 30 children with ASD ($M = 13.0$ years) with $IQ \geq 70$ were capable of identifying and accurately reporting symptoms of anxiety and depression, as demonstrated by comparisons to different parent and clinician scored assessments.

Interestingly, Bosson et al. (2010) asked children about the types of strategies they use while learning in a classroom environment and found that a child's awareness of the strategies he/she used had a low to moderate positive correlation with the strategies that he/she actually used. This was measured by observing the child solving curriculum-related tasks (e.g. math problem), and discussing what he/she did after finishing. This shows that the strategies children were able to verbalize and discuss would likely be an underrepresentation of all of the strategies that they have learned and used in times of need. Furthermore, children also have a tendency to not highlight strategies and ideas that seem obvious to them, and so they may simply assume that some of the more obvious strategies (to them) would inherently happen and neglect to mention these strategies (Bosson et al., 2010).

Jeffries and Maeder (2009) suggest that vignettes are effective at assessing what students have learned in an education setting, and the use of vignettes in teaching students increases the

ability of students to apply the knowledge they have learned when they are assessed using a vignette with a new problem to solve. Jeffries and Maeder (2009) found that paired with a good scoring guide, vignettes are highly correlated with other forms of assessment typically used in educational settings such as forced-choice or summarization assessment tasks. Sofronoff et al.'s (2005) study is one example of a study that measured procedural knowledge acquisition through the use of a hypothetical situation *James and the Math Test* in order to measure if children were able to generate strategies that they were taught during the treatment program. Another study by Beaumont and Sofronoff (2008) used *James and the Math Test* to measure the anxiety and anger management strategies in 49 children ($M = 9.64$ years) with Asperger's Syndrome and an IQ of 85 or above after completing a social skills program. They found that the treatment group (and not the control group) had significant gains in scores from pre to post-treatment (pre $M = 1.70$, post $M = 3.81$), and these gains were maintained at 6-week follow-up.

Literature on adults. When examining the literature on knowledge acquisition in adults, there is some research in knowledge acquisition and the correlation with treatment outcomes. For example, there has been some success in testing the skill acquisition of adults after a CBT program, with Jacob, Christopher, and Neuhaus (2011) developing and validating the *Cognitive-Behavioural Therapy Skills Questionnaire* which measures the reported use of CBT skills in adults. The participants were asked to fill out a questionnaire, which consisted of Likert scales from 1 (*I don't do this*) to 5 (*I always do this*) and to rate their use of the different CBT skills they learned during therapy. Jacob et al. (2011) hypothesized that the skills they have included in their measure (and thus, a good score on their measure) are predictive of a better treatment outcome and a reduced risk of relapse. Further, having a better measure of what skills patients are learning and using will allow them to understand which skills are the most beneficial to the

patients and which are predictive of treatment success (Jacob et al., 2011). Overall, they found that two factors of their questionnaire (Behavioural Activation and Cognitive Restructuring) had good factor structure and internal consistency. These two factors also were able to predict overall decreases in symptoms.

Another study by Andersson, Carlbring, and Furmark (2012) found that Swedish adults diagnosed with Social Anxiety Disorder who went through guided internet-delivered CBT gained knowledge of social anxiety disorder and its treatment, while those who were in the control group did not have an increase in their knowledge as measured by a knowledge test the researchers developed. They also noted a small but significant association between knowledge acquisition and treatment outcome for those in the treatment group. Those in the treatment group had more knowledge post-intervention and also reported having more conviction in their knowledge. Improvement in the knowledge test was correlated with improvement on the *Social Phobia Screening Questionnaire* and on the *Social Phobia Scale*. Andersson et al. (2012) acknowledged that there is minimal research in this area, and that this knowledge gap is significant as one main component of CBT is psychoeducation, and so it is important to measure if the patients are actually having a knowledge increase, and whether this knowledge increase is related to treatment success and future outcomes.

While there is some literature in the area of knowledge acquisition in clients receiving CBT for anxiety, more information is needed on whether children with ASD or their parents are able to accurately report the strategies they learn and use after undergoing a treatment program. The present thesis is a preliminary study that attempts to examine if children and parents who are taught CBT strategies are able to recognize them as tools and apply them to a hypothetical vignette.

Purpose of the Present Study

This thesis builds on the work conducted by Vause et al. (2015) in the preliminary RCT by examining different aspects of the research (i.e., response to hypothetical vignettes). A previous thesis by Koffman (2013) examined data from the ongoing RCT to explore strategies that the parents were able to generate before and after treatment. Changes in parent knowledge were examined with the difference being significant, with 68% of parents improving the number and/or quality of their strategies at post-treatment. This thesis will expand on Koffman's work by adding additional parents to Koffman's original pool.

The second and primary purpose of this thesis was to determine if the children are able to generate significantly more strategies with regards to a hypothetical situation after exposure to the treatment program (*I Believe in me not OCB!*; Vause et al., 2013) compared to a TAU group. The goal of the therapy program was to be a short-term OCB treatment that would provide the children and their parents with strategies and tools to use in the future. This study measures whether the program was able to teach children general strategies for dealing with OCBs that they are able to report to assessors.

Research Questions and Hypotheses

The research question was whether the children and parents who went through the treatment program "*I Believe In Me Not OCB!*" (Vause et al., 2013) were able to report the strategies they learned in treatment when presented with a hypothetical vignette, and if this reporting of strategies was related to several factors including their treatment success, their age, and IQ.

The hypotheses surrounding this research question were as follows:

- Children in the experimental group will be able to generate significantly more strategies than children in the TAU group.
- Based on Koffman (2013), parents will be able to generate significantly more and/or better quality strategies after treatment compared to before treatment.
- Children who were more successful in treatment will generate more strategies than those who were less successful in treatment as measured by parent-rating scale and RBS-R (Bodfish et al., 1999).
- Given high parent involvement in the treatment program, children who were more successful in treatment will have parents who were able to generate more strategies, and/or higher quality strategies.
- Children who were able to generate more strategies will have parents who were able to generate more and/or higher quality strategies.
- Children who were able to generate more strategies will have a higher age and IQ than those who generated fewer strategies.

Method

Participants and Setting

There were 24 parents who completed the treatment program and filled out both a pre- and post-intervention vignette. Prior to the beginning of treatment, the child participants were randomly assigned to the experimental group or TAU. There were 17 children in the experimental group (age $M = 10.12$) and 18 in TAU (age $M = 10.25$). In order to be included in the RCT, children had to have a diagnosis of ASD from a psychologist or pediatrician, score ≥ 70 on the short-form *Wechsler Intelligence Scale for Children – Fourth Edition* (WISC-IV; Wechsler, 2004; one child had a score of 60) and presence of OCB as measured by the RBS-R

(Bodfish et al., 1999) and CY-BOCS (Goodman et al., 1986). All children had the short-form WISC-IV (Wechsler, 2004) administered as part of the assessment procedure with the exception of one child who was assessed with the *Leiter International Performance Scale Revised* (Roid & Miller, 1997).

Demographics information for all participants is presented in Table 1. Categorical variables were tested using chi-square to look for significant differences between groups, and continuous variables were tested using independent *t-tests*. As shown in Table 1, there were no significant differences between groups at the .05 level. While parents in the experimental group were asked not to change their child's medication or to participate in any other treatment programs for anxiety and/or repetitive behavior, there was one child in the treatment group who did change her medication during the treatment phase (changed from Strattera 15 mg to Cipralex 15 mg) but this was not grounds for exclusion of her data. One child in TAU began a new medication and the remaining participants remained stable or were not administered medication.

Assessment Materials

Assessments were conducted by two independent assessors who were MA candidates in Applied Disability Studies and Education. Each assessor received over 70 hours of training from the primary investigator who has a Ph.D. in Clinical Psychology.

Repetitive Behaviour Scale- Revised (RBS-R; Bodfish et al., 1999). This scale is used to measure the presence and severity of repetitive behaviours in children with ASD. There are 43 items which are divided into 6 subscales. For each item the respondent is asked to rate the severity of the individual's behaviour on a four-point Likert scale from 0 (*behaviour does not occur*) to 3 (*behaviour occurs and is a severe problem*). The internal consistency for each

subscale ranges from .78 to .91, and inter-rater reliability ranges from .57 to .73 for each subscale (Lam & Aman, 2007).

Table 1

Demographics and Clinical Information for CBT and TAU groups

	CBT (<i>n</i> = 17)	TAU (<i>n</i> = 18)	χ^2/ t value
	<i>n</i> (%)	<i>n</i> (%)	
Child sex (male)	12 (71)	14 (78)	.24
Child age	10.12 (SD =1.89)	10.25 (SD =1.84)	.83
Diagnosis (diagnosis prior to DSM-5)			
Autism	8 (47)	8 (44)	.02
PDD-NOS	4 (24)	2 (11)	.95
Asperger's Syndrome	5 (29)	8 (44)	.85
Mean total score for RBS-R	53.29 (SD =18.62)	46.67 (SD =18.76)	.30
Mean total score for CYBOCS compulsions	14.64 (SD =1.73)	15.33 (SD =2.00)	.29
Mean IQ (Child Short Form WISC-IV)	93.38 (SD = 19.39)	92.44 (SD = 17.44)	.88
Parent education			
Mother - college or university graduate	16 (94)	13 (72)	2.95
Father - college or university graduate	11 (65)	12 (67)	.02
Parent married/remarried	13 (76)	15 (83)	.26
Ethnic background			
Caucasian	14 (82)	15 (83)	.01
Asian/Pacific Islander	1 (6)	2 (11)	.31
Multiracial	1 (6)	1 (6)	.002
African Canadian	1 (6)	0	1.09
Psychotropic medication use			
SSRI	4 (24)	3 (17)	.26
Stimulant, atomoxetine	3 (18)	8 (44)	2.91
Family financial status			
Less than \$40,000	3 (18)	1 (6)	1.26
Between \$40,001 and \$90,000	8 (47)	8 (44)	.02
More than \$90,000	6 (35)	7 (39)	.05
Chose not to say	0	2 (11)	2.00

Note: DSM-5 = Diagnostic and Statistical Manual, Fifth Edition; RBS-R = Repetitive Behaviors Scale – Revised; CY-BOCS = Children's Yale-Brown Obsessive Compulsive Scale; WISC-IV = Wechsler Intelligence Scale for Children, Fourth Edition; SSRI = Selective serotonin reuptake inhibitor; CBT = Cognitive-Behavior Therapy; TAU = Treatment as Usual; χ^2 = results from chi-square test; *t* = results from t-test; no comparisons were significant, $p > .05$

Parent-rating scale. The parent-rating scale was a Likert scale that ranged from 1 (*desired levels of behaviour*), to 5 (*pre-treatment levels of behaviour*) and was used as part of the RCT. Daily experimental group parent-ratings were collected for each OCB during baseline, treatment, post-treatment, and at 5-month follow-up. Parents were asked to score the behaviours at the same time each day and to have the same parent score the behaviours each day.

Sally vignette. The Sally Vignette (see Appendix A for child Sally Vignette) offers a short scenario with the use of visuals about a child who is struggling with OCB, and asks the child for suggestions as to what the child could do, or how he/she could help them. The vignettes were read to the child by the assessor and the child was asked to either write down or verbalize (for the assessor to write down) his/her ideas and suggestions. During the first and last session of treatment, parents also responded to a similar vignette, but written from the perspective of how the parent could help his child (see Appendix B for parent Sally Vignette).

Procedures

This study received clearance from the Brock University Research Ethics Board, and consent and assent forms were signed by parents and children, respectively. Parents (and children where possible) in the treatment group chose up to 10 OCBs to work on based on the severity and the impact that they had on their lives, and parent-rating scales were created for each behaviour.

Treatment program. *I Believe In Me Not OCB* (Vause et al., 2013) was inspired by March and Mulle's (1998) CBT program for pediatric OCD. Several adaptations were made to accommodate children with ASD; these accommodations can be found in Table 2. The program was nine weeks, with the weekly sessions lasting two hours each. During the session, the parents

and children in the group (2-4 parent/child dyads) were guided by two therapists through the program.

Table 2

Treatment Modifications for Individuals with ASD

Modification	Description
Repetitiveness/ Predictability of Treatment	Provided structure and predictability by following a predetermined program plan. Treatment components (e.g., group work, individual parent-child dyads) were in the same order each week. Weekly session schedules were presented in the workbook and on a whiteboard. Although predictable, we gradually encouraged work on flexibility through introducing new behaviors with individualized adaptations (e.g., use of visuals, type of cognitive training) and schedules were adjusted (e.g., an activity out of sequence).
Emphasis on visuals, choice of response modality, and concrete exercises	Workbook contained visuals (in addition to text) to illustrate concepts, and child activities included choice in drawing, writing, and/or responding vocally. Activities were tangible (e.g., tracking progress in resisting compulsions with clear visual markers such as numbers).
Within Session Rules and Token System	Session rules pertaining to social-communicative and on-task behavior were reviewed weekly and practiced during individual and group activities. Children earned ten tokens for following session rules and exchanged them for a back-up reinforcer (e.g., preferred tangible) at the end of session.
Immediate and Delayed Reinforcers	Preferred items were delivered for completing E/RP goals. Items were written in the workbook and earned if the child accomplished his/her goals daily and response requirements were gradually increased.
Incorporation of Child's Interests	Children's unique interests were incorporated into the therapy components (e.g., using stickers with their favorite character) or including a favorite character as part of their support team.
Social Skills Exercises	Social skills activities (with and without parents) are incorporated into each session. Social skill components became progressively more difficult (and build on skills

learned in previous sessions).

Note. From “Preliminary randomized trial of function-based cognitive-behavioural therapy to treat obsessive compulsive behaviour in children with autism spectrum disorder,” by T. Vause, N. Neil, H.Jaksic, G. Jackiewicz, & M. Feldman, 2015, *Focus on Autism and Other Developmental Disabilities*, DOI: 10.1177/1088357615588517. Reprinted with permission

Phase 1: Psychoeducation and mapping. The initial weeks of the program focused on psychoeducation and mapping which explained to the child what OCB is, how to recognize when OCB is “the boss of them,” and mapping their obsessions and compulsions and how troubling they were to the child. Children were assigned homework to help them identify their OCBs and any related thoughts, feelings, or worries. Externalizing OCB was emphasized and the fact that it was not the child’s fault, but it was something that they could take control over with the help of their support team. Children were taught that they could “boss back OCB” and be in control of their OCBs. Children’s OCBs were rated using a fear thermometer (how upset the child would be if he/she could not perform the compulsion), and then these ratings were used to help map the behaviours. This mapping was done on a chart with three columns: OCB zone (the child has no control over the OCB), OCB-Me zone (the child has some control over the OCB), and the Me zone (the child has complete control over the compulsion). The child and parent worked together to map the OCBs, and this map was used each week to help the child map his/her progress throughout therapy.

Phase 2: Individualized treatment with functional behavioural assessment and CBT components. Phase 2 involved individualized treatment for the OCBs using functional behavioural assessment and CBT components (e.g. using coping statements or replacement behaviours, and E/RP with positive reinforcement). Prior to specifically working on each behaviour, therapists conducted a functional behavioural assessment with the parents to determine perceived functions and develop function-based treatments for the target behaviours

(e.g. not providing attention for an OCB that might also be maintained by an attention function). Starting in the third treatment session, the dyads were given tools to plan E/RP situations both in the therapy group and throughout the week at home and at school. This involved writing up a plan for how often the child would expose themselves to situations that they would typically perform their OCB in, and how he/she would withhold from engaging in their compulsion (e.g. gradually increasing the amount of time before they wash their hands after touching a door handle and having a conversation with their sibling to distract themselves during this time). The child and parent would create goals for these exposures (e.g. waiting 30 seconds the first day, 45 seconds the second day, 60 seconds the third day, and so on), and outline the reinforcement the child would receive for completing these goals. The plan also involved discussing which strategies the child would use in order to refrain from engaging in their OCB, and writing down three coping strategies including at least one statement that they could say to themselves (an externalizing statement, positive self-statements, or challenging faulty assumptions), and at least one replacement behaviour they could do (e.g. relaxation techniques such as deep breathing, doing another activity, or having a conversation about something else).

Parent training component. Throughout the program, parents had a training session while the children engaged in social activities. This component taught them about OCB and its etiology, ways that they could help and coach their child, and ways to prevent relapse behaviours. Parents were also taught about possible functions of behaviours, as well as positive reinforcement, and maintenance of behaviours. The parent training component was designed to increase parental competence in the strategies taught to them and their children, and that they would be able to use these strategies again in the future during any relapses. During parent training, the therapists used behaviour skills training to teach the parents, which included role-

playing to practice using these strategies with their children while the therapists provided feedback and input to the parents.

Treatment integrity. Treatment integrity was calculated using a procedural integrity checklist based on the child and clinician manuals for *I Believe In Me Not OCB!* (Vause et al., 2013). Trained observers watched video recordings of the treatment sessions to determine if all of the activities on the checklist occurred. Treatment integrity was calculated by taking the number of checklist items performed correctly and dividing by the number of applicable checklist items and multiplied by 100. Mean treatment integrity was calculated for 49% of sessions, and was 100%. IOA was also conducted on treatment integrity for 11% of the sessions with 100% agreement.

Delivery of Sally vignettes. Child participants were read the Sally vignette and asked to answer the question independently during both the pre- and post-treatment assessment sessions which took place in a room with tables and chairs. Children could write their answers down or dictate them to the independent assessor, whichever they preferred. Assessment sessions were several hours in length and took place with the child, parent, and assessor in the room, with the Sally vignette being one of many assessments that the child completed.

Parents filled out the Sally vignette during the first and last treatment sessions (Sessions 1 and 9). Parents were taken to a separate room and handed the vignettes and asked to answer the question independently. Parents had as long as they needed to answer the questions.

Scoring of Sally Vignettes

In order to ensure that the marking was unbiased, a third party randomized the order of the responses (to help ensure that the scorers could not identify participants and which responses were pre and which responses were post-intervention) by assigning a random code to each of the

responses and photocopying the responses with this code visible and no other identifying information. These photocopies were the responses that the scorers had access to and a spreadsheet was created with the participant's identifying information and random code in order to separate out the responses based on treatment group after scoring was completed.

Parent scoring system. For the parent responses, the scoring system was created previously for an unpublished master's thesis (Koffman, 2013; see Appendix C). Appendix C also gives examples of correct parent responses. Koffman scored 38 responses (19 participants), with 10 additional parent responses scored (5 parent participants were added) for this thesis, for a total of 48 responses used (24 parent participants with a pre- and post-intervention score). The parent responses were scored by primary scorer, with the secondary coder scoring for reliability purposes on 40% of the scores.

Parent responses were scored using a scoring system where each response was scored a 0 (*unrelated comment or strategy or demonstrating no understanding of a concept*, e.g. use hand sanitizer), a 1 (*demonstrating partial knowledge of a concept*, e.g. wait 3 min before washing hands), or a 2 (*demonstrating complete knowledge of the concept*, e.g. increase the amount of time waiting before washing hands, 30 sec, 1 min, 3 min.). While creating the scoring system for the parent responses, the author (Johnson) and the creator of the scoring system (Koffman) worked together to ensure scoring was consistent. Both individuals first independently scored 10 sample responses (responses that would be similar to parent responses but were not the actual responses) that were created by individuals who were familiar with the treatment program. Agreement for these 10 responses was 70% and so the scores for these 10 responses were discussed until the scorers could agree on how they should be scored. The scoring system was then edited to make the scoring system more understandable. This process was repeated with the

new revised scoring system with the second set of sample responses having agreement of 90%. Scorers then commenced scoring on the parent responses to the Sally vignette. Mean agreement for the remaining vignettes marked by the scorers was 89% (range 50%-100%). For the additional 5 parent participants that were scored for this thesis, the primary scorer (Johnson) coded them with a secondary person (a fourth year undergraduate student) scoring five of the ten responses to ensure agreement was maintained and that scoring was consistent with those already scored. The secondary scorer had approximately 50 hours of training including watching videos of sessions and familiarizing himself with the treatment program (including the instructor manual, the child manual, and the treatment integrity checklist) in order to ensure that he is able to recognize the different strategies and keywords the parents and children were taught that might not be recognized by a scorer with no knowledge of the program. The same training procedure of scoring 10 sample responses and then scoring the real responses was repeated, with 90% IOA (range 50%-100%) for the 10 sample responses, and 90% IOA (range 50%-100%) for the added parent responses. The range for the parent responses was very large as some parents only wrote down one or two responses, and so any disagreements put the IOA at 50%.

Child scoring system. The scoring system for the child responses to the Sally vignette was created by the author and was based on Sofronoff et al.'s (2005) rating system. The children's responses were scored based on this system, and each appropriate strategy that he/she listed was given one point (with inappropriate strategies being given 0 points). See Appendix D for Sofronoff et al.'s (2005) scoring system and Appendix E for Child Sally Vignette scoring system. Appendix E also gives examples of correct child responses. Child responses were scored as 0 (*inappropriate strategy*) or 1 (*correct and appropriate strategy*). Children were expected to

have less articulate responses, and so the scoring guidelines were much looser than the parent guidelines to allow for more vague descriptions of strategies.

Each of the child responses were scored by the author, and 34% of the responses were also scored by a secondary independent scorer (a fourth year Child and Youth Studies student at Brock University, the same secondary scorer as for the parent responses). The second scorer was trained as outlined above in parent scoring section. Ten sample responses were generated by a therapist for the treatment program for the primary and secondary coder to practice scoring on. The author and the scorer marked five sample responses first, compared their scores, and discussed any differences or confusion in the scoring system. Then they marked the remaining five sample responses. Agreement was over 90% ($M = 95.5\%$, range of 75%-100%) so they moved on to scoring the child's responses.

When marking the child responses the scorers marked two sets of a random 5 responses ensuring that they still had agreement of 80% or more on the first five responses before moving on to the second 5 responses. Once 80% agreement was reached on both sets of 5 responses, the primary scorer continued to mark the rest of the child responses with the secondary scorer marking 34% of the responses to ensure that agreement was maintained for the rest of the responses. IOA for the child responses was 82% (range of 0-100%). The range in agreement is so broad simply because many children wrote down one idea, and so if the author and the second scorer disagreed on whether the response was worth 1 point, agreement was 0% for that child (4 of the 28 responses had an agreement of 0).

Results

Parent Time Comparison

A one-tailed paired sample t -test was conducted to compare the results of the parents ($N = 24$) on the Sally vignette. Parent knowledge as measured by the Sally test at pre-test ($M = 5.29$, $SD = 2.94$) was significantly higher from post-test ($M = 7.42$, $SD = 3.92$), $t(23) = -2.75$, $p = .01$, with a moderate effect size ($d = .63$). After completion of the program, 75% of adult participants (18 out of 24) improved in the number and/or quality of strategies generated, as measured by an increase in their score on the Sally vignette using the parent scoring system.

Child Group Comparisons

Two participants from the experimental group were removed as they were identified as extreme outliers using SPSS's explore feature as they had pre-test scores that were significantly higher than the average (Tabachnick & Fidell, 2000). No outliers were found in the control group. A 2×2 mixed design ANOVA with repeated measures was conducted and there was a significant interaction between time (pre- and post-intervention) and group (experimental and control), $F(1, 31) = 4.32$, $p = .05$, with a small effect size ($\eta^2 = .04$). This significant interaction was probed in two ways to investigate the simple effects. First, using a one-tailed independent samples t -test, experimental and TAU groups were compared at pre- and post-treatment; the groups did not differ at pre-treatment $t(31) = .36$, $p = .73$ and results at post-treatment $t(31) = 1.79$, $p = .08$ approached significance. Second, using a one-tailed paired samples t -test, when comparing group performances at pre- and post-treatment, the experimental group showed a significant increase in the number of strategies generated $t(14) = -2.75$, $p = .01$ but the TAU group did not $t(17) = -.70$, $p = .25$. See Figure 1 for the differences between the experimental and TAU groups on the number of strategies generated at pre- and post-test.

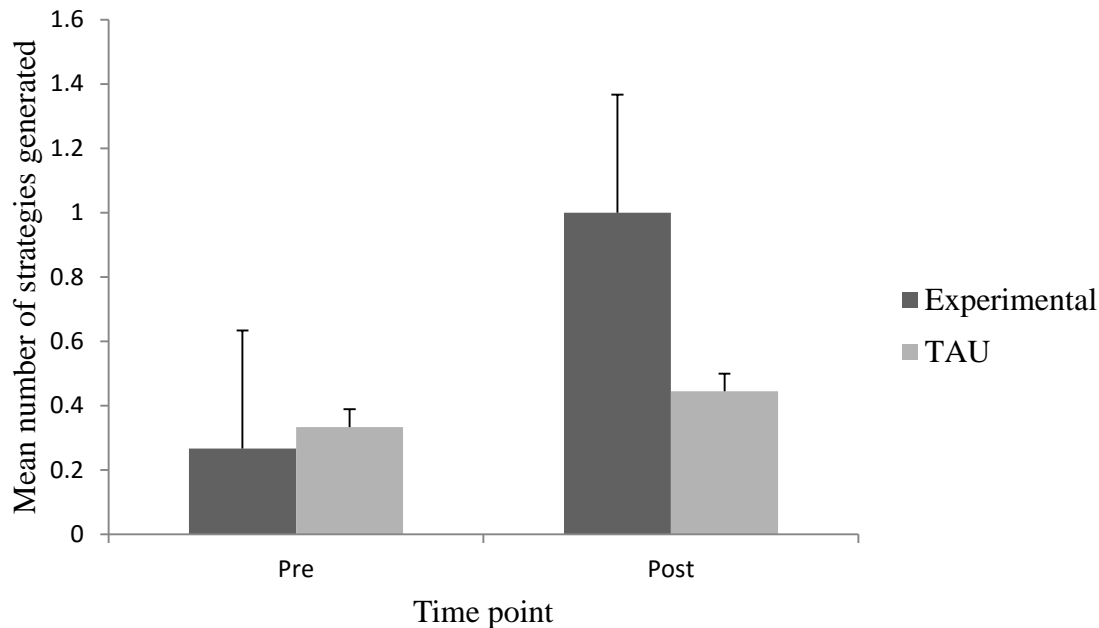


Figure 1. Comparison of number of correct strategies generated by children in experimental and TAU groups in response to the Sally test at pre- and post-intervention time points with standard error bars.

Children in the experimental group were able to generate more strategies at post than pre (pre $M = .27$, $SD = .59$; post $M = 1.00$, $SD = 1.13$), with 8 out of 15 children (53%) improving on the number of strategies they were able to generate. Children in the control group only slightly improved the number of strategies generated (pre $M = .33$, $SD = .49$; post $M = .44$, $SD = .62$), with 5 out of 18 children (28%) having an increase in the number of strategies generated.

The number of incorrect strategies and pre and post-test was also explored using a 2×2 mixed designs repeated measures ANOVA but the interaction was not significant $F(1, 32) = .90$, $p = .35$

Child Time Comparison

A one-tailed paired samples t -test was then conducted to compare the number of strategies generated at pre and post-test for all children ($N = 27$). This analysis was conducted on all individuals who completed the therapy program (including the children who were originally

in the TAU condition and who were offered the therapy program after finishing TAU). Changes in the number of strategies generated from pre-test ($M = .30$, $SD = .61$) to post-test ($M = 1.07$, $SD = 1.04$) was statistically significant $t(26) = -3.72$, $p = .0005$, with a large effect size ($d = .92$). Overall, 59% of child participants (16/27) improved the number of strategies generated on the Sally test after the treatment program. The number of incorrect strategies was also analyzed with the number of incorrect strategies at pre ($M = 1.15$, $SD = .72$) being slightly higher than at post ($M = 1.00$, $SD = .88$); a one-tailed paired samples t -test was not significant $t(27) = .66$, $p = .26$. An exploratory 2×2 mixed design ANOVA with repeated measures was conducted to determine if the passage of time played a factor in the success of the TAU group after they received treatment, but the interaction between time and group was not significant, $F(1, 25) = .07$, $p = .80$.

Correlations

In order to determine if there was a relationship between the knowledge acquisition of the child and of the parent, the score of the parents on the Sally post-test and the number of strategies the child generated were correlated. The results were not significant, $r(20) = .14$, $p = .54$.

Further, treatment outcome measures were correlated with both the parent and child results of the Sally test to determine if treatment outcomes and knowledge acquisition were significantly correlated. First, the child's post-RBS results and the child's Sally post-test results were not significantly correlated, $r(25) = -.12$, $p = .54$. Second, the child's post-RBS results and the parent's Sally post-test results were not significantly correlated, $r(22) = -.04$, $p = .85$. Third, the scores from the post-treatment parent-rating scale and the child's Sally post-test results were not significantly correlated, $r(25) = .08$, $p = .68$. Finally, the scores from the post-treatment parent-rating scale and the parent's Sally post-test results were not significantly correlated, $r(22)$

= .04, $p = .87$. Finally, the child's age was not significantly correlated with the number of post-test strategies generated, $r(25) = .03$, $p = .89$, nor was the child's IQ $r(24) = -.07$, $p = .75$.

Discussion

Adding to the results of Koffman (2013), the parents showed a significant increase in the number of correct OCB reduction strategies they were able to generate after participating in the treatment program. This increase in frequency and/or quality of parent reported strategies suggests that learning the treatment material may have contributed to the generation of more and/or better strategies when given a hypothetical vignette. Mastering the treatment material and being able to generalize it to different situations is essential, given involvement of the parent as 'coach' in the child's treatment and the waxing and waning nature of OCBs (March & Mulle, 1998).

Examining the results of the children, participating in this treatment program increased children's abilities to generate strategies when given a hypothetical situation. At post-treatment, although *post-hoc* analyses indicated that the number of correct strategies generated by experimental and TAU groups only approached significance ($p = .08$), children in the treatment group were able to generate significantly more strategies from pre to post-treatment in comparison to TAU. This non-significant result between groups at post-treatment ($p = .08$) may be due to the variability in the results of the experimental group at post-test, and future research is needed to explore why children differed on number of strategies generated.

A significant difference in the number of strategies generated from pre to post-treatment for the experimental group (and not TAU) is comparable to findings of Beaumont and Sofronoff (2008) and Sofronoff et al. (2005). Further, there was no difference in the number of strategies generated between those who had to wait a period of time before receiving the treatment (TAU

group) and those who received it immediately (experimental group). This was assessed to ensure that children in TAU were not significantly different in their ability to generate strategies from those in the experimental group after waiting several months before receiving treatment.

Different from the above studies (Beaumont & Sofronoff, 2008; Sofronoff et al., 2005), participants in our treatment program showed lesser improvement in the number of strategies generated. In this study, children were able to generate $M = 1.07$ strategies post-treatment, while in Beaumont and Sofronoff (2008), the treatment group generated $M = 3.81$ at post-treatment and in Sofronoff et al. (2005) the treatment group generated $M = 5$ strategies after the treatment program. While in the present study children were able to generate an average of one strategy ($M = 1.07$) at post-treatment, 59% (16/27) of the children who went through the intervention program did improve the number of strategies generated.

While it is unclear why the results of this study were different from previous studies in that there was less of an improvement in the children in the experimental group, there are possible explanations. First, the children in the Beaumont and Sofronoff (2008) and Sofronoff et al. (2005) studies had a diagnosis of Asperger's Syndrome, whereas the children in this study had a more diverse range of ASD diagnoses (including 5 participants with Asperger's Syndrome; see Table 1 for breakdown of diagnoses). Although this difference in diagnoses may have impacted the child's ability to verbalize the strategies they used, IQ was not significantly correlated with the number of strategies generated. Second, the vignette used by Sofronoff et al. (2005) was a very general scenario about experiencing anxiety in a test, whereas the Sally vignette was about a specific obsession and compulsion (i.e., fear of germs and handwashing). Given that there were only four children in this study who had a handwashing compulsion, it may have been more difficult for children to relate to the vignette and generate strategies. Future

research should explore differences between those who have the same or very similar behaviours to those in the hypothetical vignette versus those who do not.

Another aspect to consider is the wording of our vignette, which focused on the worries or obsession rather than the behaviour or compulsion. The children were asked to “Write down what you think Sally can think and do to feel less worried about getting sick from the sneeze.” A lot of the children in this study did not have specific obsessions that they could verbalize, and so asking them to come up with strategies related to an obsession might not be as effective as asking them to come up with strategies related to compulsions. If the vignette had instead asked what Sally could do or think to not wash her hands so much, the children may have generated different answers. During the development of the vignette asking the child what they could do to help Sally not wash her hands so much was not included in the vignette as it was thought that it might have cued the children towards a specific answer (i.e. it was expected that the children would simply say “stop washing her hands” rather than list strategies to help her deal with the OCB). Some of the children did mention strategies related to the compulsion (e.g. washing for less time, squeezing her hands instead), but this might have increased had the instructions been worded differently. It would be interesting if further research looked at the wording of this type of a vignette to see if focusing on the compulsion more than the obsession in the vignette would help to increase the number of strategies that the children were able to generate, especially since obsessions were not confirmed in all children in the sample. Further, the vignette did not ask them to list all the strategies they could think of, and so they might have only listed one or two key strategies rather than listing a variety. Based on the research by Bosson et al. (2010) that children tend to underreport strategies that they use, it might be important to ask them to list all the strategies they can think of as they might be underreporting otherwise.

Last, with the hypothetical vignette, we were asking children with ASD to take the perspective of another person (Sally). Children with ASD have impairments in Theory of Mind (ToM) processes, which can inhibit their ability to take on the perspective of another person (Kimbi, 2014). Because of this, the Sally vignette may not have been the best way to measure the strategies that the children learned. If they did have ToM impairments, then they might not have given any answers, or any answers that made sense, even if they knew the strategies and used the strategies themselves. Future research may consider coming up with a way to evaluate this knowledge without requiring the children to use ToM as much to better assess what they know such as writing the vignette from the child's point of view (rather than from the point of view of helping someone else), writing the vignette about something the child has experienced rather than a scenario they might not be familiar with, or using some other type of measure to evaluate the knowledge gained such as a multiple choice, short answer test, or an applied scenario (which might be the most effective based on Bosson et al.'s 2010 research that children use more strategies than they articulate). There is also a need for future research to determine if the knowledge acquisition is correlated with the child's ability to apply the strategies in real scenarios.

While correlations between number of strategies, age, IQ, and treatment success were not significant, several explanations exist as to why this might be the case. First, given that the RBS-R (Bodfish et al., 1999) and parent-rating scale showed considerable decreases in OCB for all participants, this may relate to why a significant correlation was not found between treatment outcomes and the number of strategies that children were able to generate. Further, there was no correlation between age or IQ and number of strategies. A possible explanation was that the therapy program was tailored to ASD and one component involved practicing generating at least

three strategies each week per behavior, and so each child had a strategy or two that they knew well and used often. The lack of a correlation between parent and child responses might be related to how involved the parents were in the therapy program and at home with their child. Some parents might have been able to list lots of strategies in the Sally vignette, but if they were not a very good coach for their child (reviewing the strategies with their child, teaching the child about the strategies, and encouraging the child to use the strategies while engaging in E/RP) then their child may not be able to list a lot of strategies. Further research might look into some of these other factors (parent involvement, child involvement, time spent working on the OCBs together outside of the group session, etc.), as they might be more indicative of the relationship between parent and child success on the Sally vignette.

Implications

The results of this study showed a significant difference in the number of strategies that both the parents and children generated after exposure to the treatment program, but there is still considerable research to do in this area. It is unclear what variables cause the differences between the treatment children who did increase the number of strategies they were able to generate and those who did not. These variables might make a difference in the way that the children learn best from the treatment program, and understanding these variables might facilitate changes to the program that will benefit these children better. As highlighted by Bosson et al. (2010), children might be more successful at applying strategies they have learned rather than verbalizing them. Because of this, it would be beneficial to conduct research on the strategies that children actively use, rather than asking them to verbalize the strategies they use. Further, it is important to research whether the strategies that children are verbalizing are correlated with the application of these strategies in real-life situations. Specifically, more

research needs to be done on whether the parents and children are actually able to use these strategies when they are faced with an OCB, both related and unrelated to the child him/herself.

Limitations

First of all, the children were given the vignette as one measure during a barrage of measures, and might have simply been answering quickly in order to finish sooner. The assessment appointments were several hours in length, and although every effort was made to ensure that the children were not fatigued (having frequent breaks, providing food and drinks, and/or breaking the session up across multiple days), it is possible that the children were not answering the vignette the same way as they might have had they not already completed multiple assessments. Furthermore, based on the literature, there is evidence that children under-report the strategies they use, especially with regard to strategies that they think of as obvious or a given (Bosson et al., 2010). The children who did go through the therapy might be using these strategies so often that they do not think they need to be written down, as they are now “given” strategies, and so not worth reporting.

There was also no follow-up data on the number of strategies children and parents could generate after the conclusion of the treatment program. It would be important to assess this again at follow-up to see if the children and parents were able to maintain the strategies that they learned. Sofronoff et al. (2005) found that children whose parents participated in their treatment program improved significantly in the number of strategies that they were able to generate from the end of treatment until follow-up.

Conclusion

Children with ASD often experience RRBs that are very similar to OCD. These behaviours can have a significant impact in the quality of life for the child and their family.

Some research has shown that the use of a CBT program adapted to the needs and strengths of the children with ASD can significantly reduce OCBs. Through the use of a vignette, this thesis examined the knowledge acquisition of children and their parents after participating in one such treatment program as part of a RCT. There was a significant increase in the amount of strategies that parents and children were able to generate from pre- to post-intervention, as well as a significant difference in the number of strategies generated between the experimental and TAU groups for the children. Future research needs to further investigate knowledge acquisition and the connection between knowledge as measured by a vignette and active application of strategies to decrease OCBs.

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Appendix A

Child Sally Vignette

Sally is very worried about germs. She is afraid that if she does not wash all the germs off of her hands, she will get very sick. Sally washes her hands too much.



Today, Sally is in her classroom writing a Math test. A boy who sits next to Sally sneezes one time. Sally starts thinking about getting sick from the sneeze and wants to stop working on her test to go wash her hands.



Write down what you think Sally can think and do to feel less worried about getting sick from the sneeze.

Appendix B

Parent Sally Vignette

Sally and her Hand washing

Sally washes her hands so frequently and aggressively that her skin is red, dry, and cracked. She tells her mother that she has to routinely perform this hand washing ritual to prevent her from getting ill. Given that she spends so much time washing, Sally often has to rush to get to school on time, and misses class exercises (e.g., parts of Math lessons).

While writing a math test at school today, Sally told her parents that the boy who sits next to her sneezed. She said that she immediately began thinking about getting sick from the sneeze and had to stop working on her test to go wash her hands.

Write down how Sally's parents could support her both in dealing with her thoughts and corresponding behaviours.

Appendix C

Scoring Guidelines for Parent Sally Vignette

Scoring Guidelines for Sally and Her Hand Washing**Sally and her Hand washing**

Sally washes her hands so frequently and aggressively that her skin is red, dry, and cracked. She tells her mother that she has to routinely perform this hand washing ritual to prevent her from getting ill. Given that she spends so much time washing, Sally often has to rush to get to school on time, and misses class exercises (e.g., parts of Math lessons).

While writing a math test at school today, Sally told her parents that the boy who sits next to her sneezed. She said that she immediately began thinking about getting sick from the sneeze and had to stop working on her test to go wash her hands.

Write down how Sally's parents could support her both in dealing with her thoughts and corresponding behaviours.

The following scoring guidelines are modeled after the *Weschler Intelligence Scale for Children – Fourth Edition* (WISC-IV; Weschler, 2004) in order to ensure that the scoring of responses is an objective process and calls for little, if any, interpretation of scoring criteria (Weschler, 2004). This author consulted the scoring system used by Sofronoff, Attwood and Hinton (2005) in the development of the guidelines below; however, a multi-point scoring system (i.e. 0, 1, 2) was employed over the single-point system (i.e. 0, 1) used by Sofronoff et al. (2005) in order to differentiate between responses that represent a complete understanding of the intervention strategy. In addition, sample responses provided were generated from the treatment manual *"I believe in ME, not OCD!"* (Vause, Neil & Feldman, 2010), the treatment integrity checklist (Vause et al., 2010), functional behaviour assessment plans participants received weekly during treatment and this authors clinical experience.

Instructions:

Award 2 points for a response that is equivalent or superior to the sample responses.

Award 1 point for a response that is equivalent in quality to the 1-point sample responses.

Award 0 points for any response that is equivalent or inferior to the 0-point sample responses.

- ☐ The sample responses provided in the scoring guidelines below illustrate various levels of responding. The quality of the participant's response refers to the content – not the elegance or length – of the parent's answer (Weschler, 2004.) A response should not be penalized because of improper grammar or spelling.
- ☐ Responses that are awarded 2-points are those which demonstrate that the parent has a thorough or complete understanding of the intervention strategy.

- ❑ Responses that are awarded 1-point are those, which demonstrate that the parent has a partial but incomplete understanding of the intervention strategy.
- ❑ Responses that are awarded 0 points are those which demonstrate that the parent does not have an understanding of the intervention strategy.
- ❑ In some instances, one concept or strategy may be represented by multiple examples, all of which are different but correct. Score all responses separately, regardless of whether those responses are related. Punctuation to be used a guide for this – sentences separated by periods (regardless of whether or not they are grammatically correct periods) will each be scored separately.
 - *Examples:*
 - *For Sally and Her Hand Washing, score separate points for ‘ignoring the thoughts’ and ‘thinking about something else’*
 - *‘Imagining/thinking about good things’ and ‘think helpful thoughts’ should be scored separately*
 - *Sally should wash her hands less. Help Sally wash her hands fewer times.*
- ❑ In other instances, the same concept or strategy may be represented by multiple examples, all of which are the same. Even in this, score each response separately!
 - *Examples:*
 - *‘Deeping breathing’, ‘taking deep breaths’, ‘relax’, etc. each get scored as 2 points*
 - *‘Sitting with OCB’, ‘waiting until OCB passes,’ etc. each get scored as 2 points*

Example	Score
Helps Sally to learn about/understand OCB (Award 2 points for each of the examples listed below): <i>Examples:</i> <ul style="list-style-type: none"> • Teach Sally about obsessions and compulsions • Define obsessions and compulsions for Sally • Helps Sally understand OCB using a metaphor such a “brain hiccup • Talks with Sally about how OCB is just the brain sending incorrect messages • Sally should know that hand washing is a compulsion 	2
Helps Sally identify/label her obsessions and provides specific examples of the obsession (Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> • Talk to Sally about what she is thinking before she washes her hands • Sally should think about why she thinks she has to wash her hands 	2
Helps Sally identify/label her obsessions <ul style="list-style-type: none"> • Tell Sally she worries too much 	1
Helps Sally identify/label her compulsions and provides specific examples of the compulsion (Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> • Help Sally to learn that hand-washing after some sneezes is a compulsion • Talk to Sally about how other people don’t need to wash their hands after someone else sneezes 	2
Helps Sally identify/label her compulsions <ul style="list-style-type: none"> • Tell Sally that she washes her hands too much • Sally’s hand washing is out of control 	1
Sally should take charge of OCB by getting help from supports (i.e. family and friends) (Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> • Help Sally find people that can help her with her worries about getting sick 	2
Sally should come up with a nasty nickname for OCB	1

Tell Sally to “take charge” or “boss back” OCB (if both “take charge” and “boss back” OCB are stated, score each separately)	1
Help the Sally to develop a fear thermometer and gives rationale or examples (Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> Sally should rate how distressed she would be if she couldn’t wash her hands Sally could tell her teacher that she is at 5 when the boy sneezed 	2
Sally should develop a fear thermometer	1
Helps Sally to think about some of the positive consequences associated with the absence of OCB and provide examples of what these consequences might be (Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> Talk to Sally about how she would have more time to do fun things if she washed her hands less 	2
Help Sally to think about some of the positive consequences to reducing/changing her compulsion <ul style="list-style-type: none"> Sally spends too much time washing her hands. 	1
Sally should a specific relaxation strategy (Award 2 points for each of the examples listed below): <i>Example</i> <ul style="list-style-type: none"> Deep breathing Progressive muscle relaxation 	2
Helps Sally to identify possible triggers OCB by having them identify any of the following: (Award 2 points for each of the examples listed below): <ul style="list-style-type: none"> Who is around when OCB happens? What does OCB look like? Where does OCB take place? When does OCB take place? 	2
Sit with OCB	2

Example	Scores
Sally should change negative self-talk to positive self-talk <u>and</u> gives an example (Award 2 points for each if multiple statements are listed) <i>Example:</i> <ul style="list-style-type: none"> Sally can say to herself “I can’t do this” to “This may be hard, but I can do it!” 	2
States that Sally should change negative self-talk to positive self-talk <i>Example:</i> <ul style="list-style-type: none"> Sally should start saying positive things to herself Sally should stop telling herself she can’t do it 	1
Help Sally identify faulty assumptions or overestimation of risk associated with obsessions or compulsions (Award 2 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> Sally thinks that if she doesn’t wash her hands after the sneeze she will get a life-threatening illness Every time someone sneezes around her, Sally thinks her whole family will get sick if she doesn’t wash her hands 	2
Helps Sally disregard or disprove faulty assumptions by providing information or convincing “proof” (Award 2 points each if multiple examples are listed): <i>Example:</i>	2

<ul style="list-style-type: none"> • Talk to Sally about how unlikely it is that she will get from the sneeze • Explain to Sally how washing her hands many many times might make her more likely to get sick • Tell Sally how you only wash your hands 3 times a day and you don't get very sick 	
Provides general information/"proof" (Award 1 point each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Talk to Sally about when it is appropriate to wash her hands • Tell Sally that she doesn't need to wash her hands so much • Sally should only wash her hands 3 times a day, 5 times a day is too much 	1
Help Sally to learn to tolerate letting OCB come and go (i.e. cultivating nonattachment/rational nonsuppression) (Award 2 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Sally should think of OCB as a brain hiccup • Sally can think of OCB as a cloud passing in the sky • Sally should sit with OCB 	2
Encourage Sally to make a list of pros and cons <u>and</u> provides examples	2
Encourage Sally to make a list of pros and cons	1

Example	Score
Contrive opportunities for exposure tasks/helps Sally find ways to "break the rules of OCB" <u>and</u> lists examples of what these might be (Award 2 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Sally can practice not hand washing at home • Sally can wash her hands in a different order • Sally can wash her hands with a different soap • Sally can break the rules of OCB by washing her hands less times 	2
Contrive opportunities for exposure tasks/helps Sally find ways to "break the rules of OCB" (no examples provided)	1
States a specific graded exposure task(s) <u>and</u> provides two or more steps in the task (Award 2 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Help Sally delay her hand-washing by having her delay for 5 seconds, then 10 seconds, then 15 seconds 	2
States a specific graded exposure task(s) (Award 1 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Sally should delay hand washing by 5 minutes 	1
Identifies a replacement behaviour or coping strategy (Award 2 points each if multiple examples are listed): <i>Example</i> <ul style="list-style-type: none"> • Sally could squeeze a stress ball when she feels like washing her hands • * Sally should sit with OCB 	2
Sally should use a coping strategy	1
*Sally should sit with OCB	1
*Sally should ignore OCB	1
Help Sally to make a stairs of learning	1
Set goals for Sally to reduce her hand washing	1

Examples	Score
<p>Identifies that a compulsion may be maintained by attention and therefore provides reinforcement only for the absence of the behaviour (Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Give Sally praise when she isn't washing her hands • Sally's teacher should ignore her hand washing but give her attention when she isn't hand washing • Don't argue with Sally when she is hand washing 	2
<p>Provides attention for the absence of the behavior (but does not demonstrate or clearly identify function) (Award 1 point each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Give Sally praise • Make sure Sally gets attention 	1
<p>Identifies that a compulsion may be maintained by escape and suggests an intervention strategy that does not allow the child to escape an aversive event (Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Make sure Sally completes the math test, even if she washes her hands 	2
<p>Provides reinforcement when the child does not escape a difficult task to complete a compulsion (but does not demonstrate or clearly identify function) (Award 1 point each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Give Sally a reward for finishing the test 	1
<p>Identifies that a compulsion may be maintained by access to tangibles (i.e. toys, games, activities) and therefore provides access to preferred items only for refraining from engaging in compulsion (Award 2 points each if multiple examples are listed):</p> <p><i>Example</i></p> <ul style="list-style-type: none"> • Let Sally play with her favourite toy if she doesn't wash her hands after the sneeze 	2
<p>Provides access to a preferred item when the child refrains from engaging in the compulsion (Award 1 point each if multiple examples are listed):</p> <p><i>Example</i></p> <ul style="list-style-type: none"> • Let Sally play with her favourite toy if she finishes the math test 	1
Assist Sally in refraining from engaging in the compulsion even if she is ill	2
<p>Uses differential reinforcement to reinforce Sally's independence in refraining from engaging in the compulsion (Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Give Sally 15 minutes extra to play with her favourite toy if she only hand washes 15 times during the day and 30 minutes extra to play with her favourite toy if she only hand washes 10 times during the day • The more Sally tries to not wash her hands, the more rewards she gets 	2
<p>Provide reinforcement (praise, reward, etc.) (Award 1 point each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Reward Sally for not washing her hands after the sneeze • Give Sally a reward for washing her hands less times during the day • Give Sally rewards for meeting her goals 	1
<p>Introduces a token economy</p> <ul style="list-style-type: none"> • E.g. anytime Sally is around someone who sneezes and doesn't wash her hands she receives a penny. When Sally obtains 5 pennies, she can trade them in for her favourite candy. 	2

Examples	Score
<p>Suggests the use of visual supports to assist Sally in components of the intervention (award 2 points each if multiple examples are listed)</p> <ul style="list-style-type: none"> E.g. Encourages Sally to draw a picture of OCB to assist her in thinking of it as separate from herself 	2

The scoring guideline below taken directly from Sofronoff et al., (2005)

Encourage the child to seek treatment/go to a psychologist/psychiatrist/OCB group	1
Tell the child to stop engaging in the compulsion	0
Tell the child to stay calm/calm down	0
Give Sally hand sanitizer/wipes/etc	0
Show Sally how to wash her hands	0

Appendix D

Scoring Guidelines from Sofronoff et al. (2005)

1

Scoring Guidelines for James and the Maths Test and Dylan is Being Teased

Instructions: Award 1 point for each correct response.
Score 0 for inappropriate/ unhelpful strategies.

For a strategy to be scored as 1, it must be appropriate to the situation that the character is in: e.g. punching something in the classroom is likely to be inappropriate. However, this strategy may be appropriate at home.

Score separate points for responses that are related, but not exactly the same. For example, for Dylan is Being Teased, score separate points for "Tell a teacher" vs "Tell an adult/ the principal".

Don't score repetitions of coping strategies.

Relaxation Gadgets: only gets a score of 1 if at least 1 example is given.

Positive thought missiles: means thinking positive thoughts
 Score 1 point for response "positive thought missiles/ thinking positive" and 1 point for each example of a helpful thought listed.

Imagining good things and helpful thoughts: scored separately.

Answers: DECODE/ Use code cards: Score 0. Only give points for each specific helpful solution given.

Specific Guidelines for Scoring James and the Maths Test:

Just being quiet: scored as 0.

Get to know the new teacher: score 1

Score 1 point for "telling teacher _____ (e.g. that he feels scared) and asking for help" as opposed to 2.

Just trying to stay calm: given score of 0 points: need to list specific strategies of how to stay calm.

Don't tell anyone his answers: score 0: not an anxiety management strategy.

Study for the test: score as 1 point: likely to help reduce James' anxiety about the test.

General mention of asking a friend for help: score 1; asking a friend for help on the test: score 0 (not practical solution).

Asking teacher for help with test: distinct from asking teacher for help with nerves/ anxiety and asking teacher to keep the class quiet: score 1 point for each suggestion.

Appendix E

Scoring Guidelines for Child Sally Vignette

Instructions: Score 1 point for each appropriate strategy listed or broad statement related to treatment, with separate strategies being identified by: the beginning of a new sentence using a period, starting on a new line, or a new line of thought within a sentence (for example if a child said “Sally should tell OCB to go away and use a stairs of learning” it would be scored as a 2). Scores should be given based on the content of the responses rather than the length or grammatical correctness.

If the child lists the same strategy multiple times with different examples, each example should be scored as a separate strategy (e.g. “Sally should tell OCB to buzz off” and “Sally should tell OCB to go take a hike” would each be scored as one point).

If the child both lists the strategy and then lists an example, score one point each for both the strategy and any subsequent examples (e.g. “Sally should create a stairs of learning and practice not washing her hands” would count as two points).

If the child lists strategies to deal with the idea that Sally’s hands are dirty or raw rather than dealing with the obsession or compulsion this should be scored as a 0 (e.g. “Sally should use hand sanitizer”, “Sally should keep wipes in her desk so it doesn’t interrupt her learning”, or “Sally should use hand lotion so her hands aren’t sore”).

If the child simply states that Sally should not wash her hands score it as a 0. If they list a specific OCB strategy such as “ignore OCB”, or “wait a period of time before washing her hands”, score it as a 1.

If the child says that Sally should not worry about it score it as a 0 (e.g. “Sally should stop worrying”, “Sally should ignore it”). If the child makes specific mention of a thought, score it as a 1 (e.g. “Sally should ignore the thought”).

If the child provides a proof or argument to “debunk” any false assumptions score it as a 1 (e.g. “Sally should remember that she won’t get sick from one sneeze”).

Score 0 for any general statements not directly related to the situation (e.g. “Sally should do what her parents tell her”), or for no response.